# IN-TRANSIT DISINFESTATION IN FREIGHT CONTAINERS USING CARBON DIOXIDE: AN OPERATIONS MANUAL.

Jan E. van S. Graver*, H. Jonathan Banks, Stored Grain Research Laboratory, CSIRO Entomology, GPO Box 1700, Canberra ACT, Australia
Alister K. Sharp, Food Science Australia, PO Box 52, North Ryde NSW, 2113, Australia

General-purpose freight containers are widely used to transport durable commodities. Fumigation is the only process that can disinfest containers and their contents completely, and presently only methyl bromide and phosphine are available for this purpose.

This manual describes a new disinfestation technique that uses carbon dioxide. The technique can be used in-transit, and provides a disinfestation treatment that meets quarantine requirements for phytosanitary certification for freedom from insect infestation.

The method, developed in Australia, represents the outcome of more than a decade of collaborative research. It has been tested extensively using different container types, and a range of commodities under varying climatic conditions. It has been applied successfully to organic and bio-dynamic foods, for which fumigants other than carbon dioxide are not permitted.

This disinfestation technique is applicable to cargoes of bagged or bulk grain or similar durable foodstuffs, and as well as the ability to be used in-transit, it has a number of other advantages including ease of use, absence of residues, low mammalian toxicity.

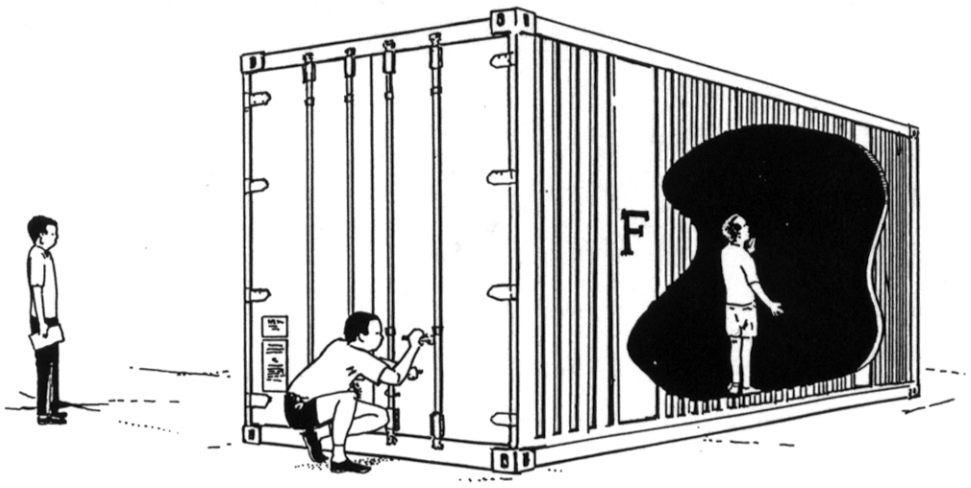
The technique is not suitable for most perishables (fresh fruit and vegetables), since they cannot withstand the required gas regime.

This is a pre-publication draft of the operations manual written for fumigators-in-charge and others, who are closely involved with the 'hands-on' aspects of fumigation. Its objective is to allow such people to apply this new technique successfully. It provides detailed instructions, indicates options (gas sources, equipment, etc.) where they are known to exist, and is extensively illustrated. Where limitations in knowledge are recognised, these are clearly indicated in the text.

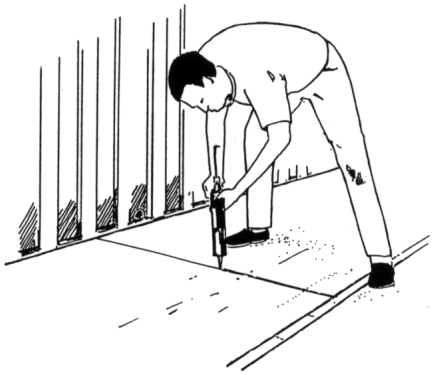
We invite professional fumigators, as potential users of this technique, to comment on any shortcomings or errors that they may encounter in this draft and also contribute any innovations that they might have to offer, before this manual is published and put in the public domain.

For example, is it too detailed, are there sections that require more detail, does it need more illustrations, etc? Send any queries or comments, *by the end of February 2001*, to:

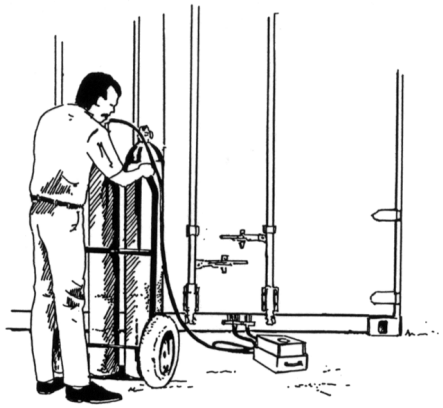
Jan van S. Graver,
CSIRO Entomology,
Stored Grain Research Laboratory,
GPO Box 1700,
Canberra ACT 2601.
Fax: (61-2) 6246 4202,
Email: janvg@ento.csiro.au



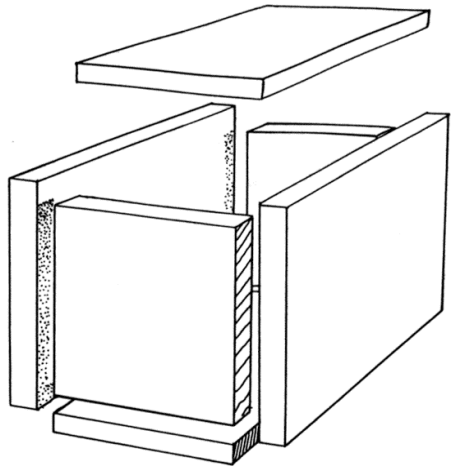

Selecting containers.



Improving the seal of the floor.



Pressure testing with a ‘finger manifold’.



Polystyrene container for top up dose of dry ice.